

(12) UK Patent Application (19) GB (11) 2 027 190 A

(21) Application No 7830509

(22) Date of filing 20 Jul 1978

(23) Claims filed

20 Jul 1979

2 Oct 1979

(43) Application published

13 Feb 1980

(51) INT CL

B08B 15/02

(52) Domestic classification

F4X A2BX

(56) Documents cited

GB 867003

(58) Field of search

F4X

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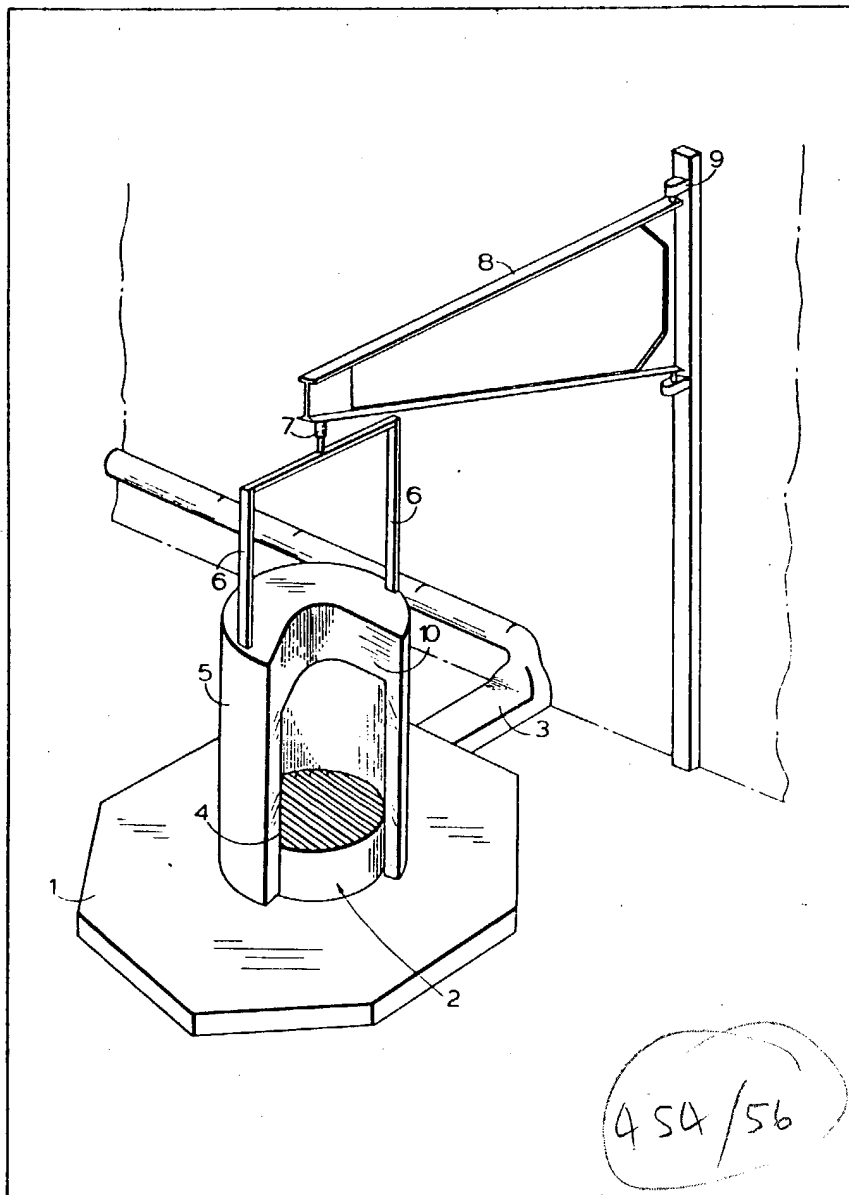
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(54) Dust extraction hoods

(57) In a dust extraction area in which an operator treats a workpiece beneath a hood 5 (for example fettles a casting), the hood 5 is arranged to be open at one side 10 and to be rotatable about a central vertical axis 7 either manually or by power means, so that the operator can obtain access to all sides of the workpiece without having to turn the workpiece yet

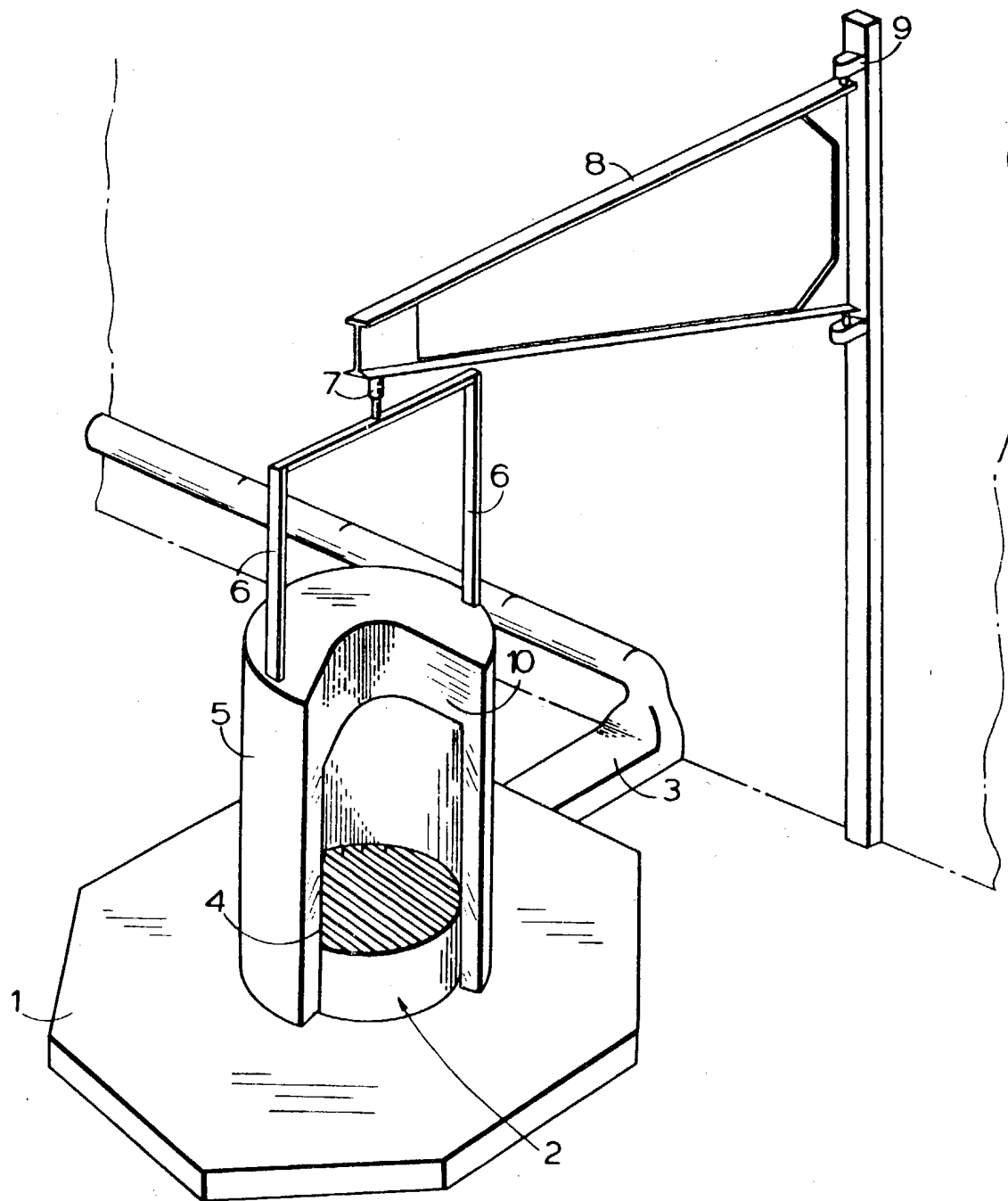
ensuring that the flow of extracted air is always inwards from the operator towards the workpiece. The hood 5 may be (a) suspended from a boom 8 so that it can be swung clear of the dust extraction area or (b) mounted on a track at floor level. A grid 4 forms the upper surface of a stool 2 for supporting the workpiece. Air and dust pass through the grid and thence through a duct 3 which leads to a fan and filter (not shown).



The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

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SPECIFICATION

Dust extraction hoods

This invention relates to hoods for enclosing a work area to confine dust created during an industrial process carried out in that area, and to allow that dust to be extracted and carried away in a flow of air.

A typical process in which such dust extraction is desirable is the fettling of metal castings. This involves the use of portable grinders, chipping hammers and abrasive cut-off wheels, and inevitable a substantial quantity of dust is produced. Small castings can be handled on a bench provided with a dust extraction hood and the operator turns the casting around on the bench to treat all sides of it. Larger castings are fettled on the floor or on a low stool enclosed in a ventilated booth. Such booths requires provision for extraction of a large volume of air in order to provide efficient dust control, and it is also essential that the casting being fettled is kept in such a position relative to the operator that it is always between the operator and the air extraction point. This necessitates that the casting shall be rotated as the operator works around its surface and it prevents the operator from moving around the casting as works. Problems involved in the handling of large volumes of extraction air include high energy requirements and the use of expensive equipment for handling large volumes of air as well as the problem of keeping the operator warm, while at the same time supplying the large volumes of make-up air which have to replace that extracted.

The aim of the invention is to allow the operator greater access to all sides of the work without losing the advantages of a restricted demand for air. According to the invention we propose that a fettling stool or other work-treatment area should be enclosed in a hood that is open at one side for access by the operator to the work but is rotatable about a vertical central axis. In this way the operator can leave the casting or other workpiece in a fixed position but move the hood itself around when he wants access to the various surfaces around the workpiece.

Preferably the hood is suspended from a single overhead pivot point, eliminating the need for any supporting rollers or track at floor level. It may be turned by hand (or simply by pressure from the operator's shoulder) or it could be power-operated. The hood may be made capable of being lifted vertically and swung aside so that a crane or hoist can be used to place and remove a workpiece. Instead of being suspended it could, where required be supported on rollers or on a track at floor level.

The invention will be described by way of example with reference to the accompanying drawing, which is a diagrammatic isometric view of a dust extraction work area incorporating a hood according to the invention.

The drawing shows a platform 1 (which may be flush with the floor instead of raised, as shown), in

the centre of which there is a stool 2 for supporting a casting during fettling. A duct 3 (which could be below the floor leads from the platform 1 to a fan and filter (not shown) and extracts air and dust downwards through a grid 4 that forms the upper surface of the stool 2.

Enclosing the stool 2 is an upright cylindrical hood 5 suspended by means of arms 6 from a single central pivot 7 that allows the hood to rotate freely about its own vertical axis. The lower rim of the hood is preferably just clear of the surface of the platform 1.

The pivot 7 is carried on the free end of a boom 8 that is mounted to swing on a bracket 9 on an adjacent wall in such a manner as to allow the hood to be raised from the position shown and also swung in a horizontal arc, clear of the stool 2.

The hood 5 is of substantially greater diameter than the stool 2 and is open over an arc of about 90°. The resulting opening is partly closed by a flexible curtain 10 that extends inwards to touch the stool 2 and also extends partly downwards from the top of the hood but still allows access for an operator using hand tools and hand-held power tools to clean a casting resting on the stool 2.

As the operator works around the casting he can turn the entire hood 5 about its axis, for example using his shoulders, so that he can reach all sides of the casting without having to turn the casting, yet the work area is always largely enclosed and so the air flow is always inwards in a direction from the operator towards the work. Indeed it is possible to use the equipment described for the fettling of castings that are much too big and heavy to be man-handled, and because the hood has a substantial clearance around the stool, the casting can overhang the sides of the stool. The hood can be moved completely aside to allow a casting to be brought into position and taken away by means of an overhead crane or hoist.

The pivot 7 may include ball or roller bearings and there may be a flexible skirt around the lower edge of the hood 5. Within the scope of the invention it would be possible, if necessary, to provide power means to rotate the hood. Also power means may be provided to lift it and/or swing it aside. However normally it should be possible to perform these operations manually.

It will be appreciated that the rotatable hood described above ensures an air flow in the right direction at all times, whilst keeping air consumption low, yet still allowing the operator free access to all sides of a casting; the hood may be employed in fields other than fettling, where the same requirements exist.

CLAIMS

1. A structure defining an enclosed work area to confine and extract dust created during an industrial process carried out in that area and comprising a hood open at only one side and rotatable about a substantial central vertical axis whereby its open side can be turned to any of a

- range of angular positions in relation to the work area.
2. A structure according to Claim 1 in which the hood is of right cylindrical shape with a closed top.
- 5 3. A structure according to Claim 1 or Claim 2 in which the hood is suspended over the work area by a rotating bearing at its upper end.
4. A structure according to Claim 3 in which the bearing is carried on the end of a boom mounted
- 10 to swing in a horizontal arc to allow the hood to be swung clear of the work area.
5. A structure according to any one of Claims 1 to 4 including provision for lifting the hood clear of the work area.
- 15 6. A structure according to Claim 1 or Claim 2 in which the hood is rotatably supported from below on a track.
7. A structure according to any one of Claims 1 to 5 in which the open side extends over
- 20 substantially 90° of the total circumferential extent of the hood.
8. A structure according to any one of Claims 1 25 extraction fan that creates a flow of air inwards through the open side of the hood and downwards through that surface.
9. A dust-extracting hood structure substantially as described with reference to the
- 30 accompanying drawing.
- Claims filed on 20 July 1979.
- Claims:
- Amendments to these claims were filed on 2 Oct 1979.
- 35 Claim 1 altered, claim 3 and 6 deleted, claims 4, 5, 7, 8 and 9 renumbered and appendancies corrected.
- Altered claim 1:—
- 40 A structure defining an enclosed work area to confine and extract dust created during an industrial process carried out in that area and comprising a hood open at only one side and suspended over the work area by a rotating bearing at its upper end so as to be rotatable
- 45 about a substantial central vertical axis whereby its open side can be turned to any of a range of angular positions in relation to the work area.